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VOID [redacted] 25X1

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CENTRAL INTELLIGENCE AGENCY

REPORT

INFORMATION REPORT

CD NO.

COUNTRY Germany (Soviet Zone)

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SUBJECT Outline of the Siemens-Schuckertwerke Porcelain Plant/Comments on Production and Personnel/Plant Layout

NO. OF PAGES 3

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THIS IS UNEVALUATED INFORMATION

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Siemens-Schuckertwerke, Neuhaus-Schierschnitz

Production

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2. The main items of production at Siemens were electroporcelain, high voltage insulators up to approximately 2 meters in height and 60--70 cm in diameter, dielectrics, spark plugs and alumina. [redacted] the laboratory 25X1 was primarily concerned with developing ceramic high frequency materials and foam bricks. [redacted] twelve patents for Siemens [redacted] were in use at Neuhaus-Schierschnitz [redacted] They included: 25X1

a. Refractory foam bricks
b. Bariumtitanate, facilitated firing
c. Improvement of the qualities of Barium titanate
d. Nearly temperature constant titanate
e. Small admixtures to titanates
f. Ceramical films

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g. Holders for silit heating elements
h. "Casting-pressing" method
i. Improvement of water-glass cements
j. Miniature furnace for ceramic research
k. Ceramic heating plate
l. Improvement of the sintercorundum casting slip

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1. Manufacturing of High-Quality Foam Refractories
2. New Furnaces for Ceramical Research
3. Manufacturing of High Quality Ceramics for Capacitors and Ultrasonics
4. "One Compound" Ceramics
5. Work on Aluminiumoxide Ceramics (Sintercorundum)
6. Alumina/

Personnel and Organization

3. Siemens had approximately 4500 employees during 1944-45, including executives, laboratory personnel, skilled and unskilled labor, etc. The organization of the laboratories and plant was as follows:

Plant Personnel: 25X1

a. Technical Director — Dr Christian Konig.

b. Personnel Director and Purchasing Agent — Dr Walter Schaffler

c. Director of Ceramic Research — Dr Martin Mehmel. Mehmel assumed the position from Dr Wilhelm Bussem in January 1948. 25X1

d. Manager of the Spark Plug Division — Dr (fnu) Reusch. He is still at the same plant 25X1

e. Manager of Production — Dr (fnu) Thumb. he is still in this capacity.

Ceramic Laboratory Personnel

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f. Manager of the Ceramic Division — Mr (fnu) Diez. His assistant was Mr H Sommer

g. Manager of the X-Ray Division — Dr Nietschmann. Probably still in the ceramic lab in the same capacity. Total of four employees in the X-Ray division. 25X1

h. Manager of the Electro Laboratory — Mr H Kehbel. he is working for Siemens in Bavaria at this time. Approximately four employees in the electro lab. 25X1

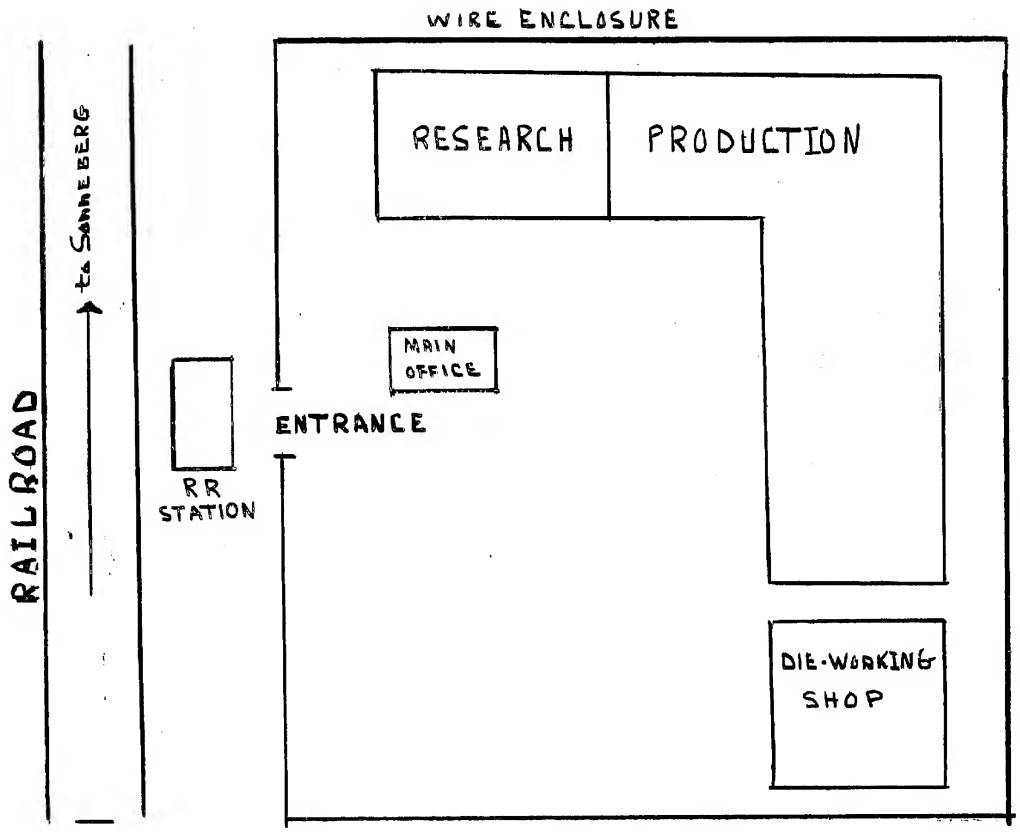
i. Manager of the Chemical Division 25X1

[redacted] 25X1

Production Laboratory Personnel

j. Chief of the Laboratory [redacted] 25X1

4. Layout of the Plant



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MANUFACTURING OF HIGH-QUALITY FOAM REFRACTORIES

APPLICATION: Thermal insulation at high and very high temperatures in research and industrial furnaces of any size. Considerable saving of raw-materials.

1. Manufacturing process. Simple and easy handling, namely: Required ingredients are mixed, let stand for rise, the foam "dough" is then filled in suitable frames until the foam is so far fixed that the frames can be removed; such stabilization requires about 45 minutes.

Very good standing stability of the casted foam stones during the drying process so that the casted bricks show only few deformation.

Very good dry-strength of the unfired foam stones, important for the transportation to firing.

2. Qualities of the ready fired foam stones. Straight line thermal expansion of the fired kaolin-foam-stones ($\beta = 4.10^{-6}$) in contrast to foam and light stones of other well known brick manufacturers in Germany which show a christobalitjump in the thermal expansion curve. (Dilatometer photos can be presented). Important for the thermal change resistance and for the longevity of the stones.

Volume weights of the fired kaolin foam stones: 0.25-0.5, crushing strength: 8-55 Klg./cm^2, in dependence of the firing height. (Samples available).

Very fine porosity (under 0.1mm); important for the thermal insulation and mechanical strength. (Microphotos available).

3. Advantage to use for this proceeding a variety of refractory materials such as sillimanit, aluminiumoxide, zirconiumoxide, zirconates, magnesiumoxide and others. Aluminiumoxide foam stones, fired at cone 14 (1410° C), show a volume weight of 0.4, i.e. a porosity of about 90 Vol. % (Samples available).

4. Easy shaping. Of the ready fired foam stones with great accuracy by sawing, boring and grinding.

NEW FURNACES FOR CERAMICAL RESEARCH

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1. Miniature research furnace for high temperature and for extremely fast firing of small ceramical samples; temperature rise up to 1500°C in 10 minutes.

The advantage consist in a great saving of working time, since the ceramical samples can be fired in not more than about 45 minutes (heating and cooling) in contrast to the usual firing in laboratory research furnaces where the ready fired samples are in the rule available on the next day only.

2. Sinterinterval-furnace. i.e. a furnace for ceramical research which gives the advantage to determine the right firing temperature for ceramical compositions in o n e firing.

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MANUFACTURING OF HIGH QUALITY CERAMICS FOR CAPACITORS AND ULTRASONICS

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1. nr. 58. Dielectrical qualities: Dielectrical constant (ε) about 100; extremely low dielectrical losses ($tg\delta$) : 1-2. 10^{-4} at 1 M.c., in optimum under 1 ! and 10.10-4 at 1 K.c. Records of electrical measurements can be presented.

2. nr. 53. Application for capacitors and ultrasonics. Dielectrical qualities : high piezoconstant up to 10 and higher; dielectrical constant (ε) about 1000. Decrease of the $tg\delta$ value till to $50_{,}10^{-4}$ at 1 M.c. Improved and facilitated firing; enlargment of the sinterinterval. Manufacturing by casting, pressing or extruding. Records of electrical measurements can be presented.

3. nr. 05. ε about 30, nearly temperature constant. Easy manufacturing, low firing temperature: cone 8/9, = 1250 - 1280°C.

4. Sp. 11-ceramic. Extremely high dielectrical qualities: $tg\delta$ about 1.10^{-4}, independent of frequency between 1 M.c. and 1 K.c. ε about 9, nearly t-constant. Firing temperature about 1800°C.

5. Improved grinding method for TiO_2-compositions and for titanates, when extremely high purity of the ceramics required.

"ONE COMPOUND" CERAMICS

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1. Sintercorundum (Dense Al_2O_3-ceramic). Improvement of the casting slip and of the peptisation, giving an increase of the longevity of the sintercorundum furnaces. Development of a method for measurements of the chemical resistance of fired sintercorundum and an increase of this resistance.
Application for spark plugs, crucibles, holders, insulators.

2. Sintermagnesit (Dense periclase ceramic, MgO); with high content of MgO (over 90%), densely fired at cone 17/18, about 1500°C; very fine-grain structure; melting point over 2000°C; thermal expansion: $\beta.10^6 = 12.8$; density up to 3.4; ε about 10; $TC_\varepsilon = 130.10^6$; $tg\delta$ $1\text{-}2.10^{-4}$ at 1 M.c.
Application: dense crucibles, holders and other parts for very high temperatures; possible base for cermets, what can be theoretically presumed.

3. Sinterforsterit (Dense Mg_2SiO_4-ceramics) with various contents of Mg_2SiO_4, up to 90%. Densily fired between cones 7 and 19, 1230°C - 1520°C.

REMARKS: Sintermagnesit and sinterforsterit belong to the class of dielectrics with extremely high electrical insulation and very low losses.

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: WORK ON ALUMINIUMOXIDE CERAMICS
(Sintercorundum)

1. Physico-chemical investigations on sintercorundum initial materials. [redacted] 25X1

2. The longevity of the sillimanitbricks in the sinter-corundum furnace and possibility to increase this longevity.
[redacted] 25X1

3. Examination of the corrosion of the spark plugs insulation parts, made from sintercorundum. [redacted] 25X1
[redacted]

4. The manufacturing process from grinded sintercorundum up to the cast-ready slip. [redacted] 25X1

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A L U M I N A

1. Summary. As shown above the $(H)^+$ - (H-ions-concentration is even in the freshmass only 0.001 -n., and the relation between the equivalents of Al_2O_3, Fe and Cl evidences that the HCl is bound in the end state as $FeCl_2$ (secondly as $FeCl_3$) and with the aluminium as basic $3AlCl_3.AlOCl$. In the slip made from old material the hydrolysis is going up to $AlCl_3Al(OH)_3$ It is noticable that both initial systems, the Al_2O_3 HCl, as well as the Al_2O_3 - $AlCl_3$ system give the same equilibrium with the formation of the oxichlorid Al_2Cl_5OH. This investigation gives a new knowledge about the reaction between Al_2O_3 and HCl, and between Al_2O_3 and $AlCl_3$; this is of practical importance for the control of the proceeding of sintercorundum.

2. Summary. HCl was usually used for reaching a good castibility of the alumina; the result of this treatment were chlorids which gave during the firing sublimation products and efflorescents, destroying the sillimanit innerwall of the sintercorundum furnace. In accordance to this development other acids were used for the peptisation, thus avoiding the formation of sublimation products.

3. Summary. Developing of a method for determining of the chemical resistivity of ready fired sintercorundum. (Dense alumina), by means of fused $K_2S_2O_7$; possible ways for increasing of this resistivity are shown.

4. Summary. Developing of a method for elimination of the washing process during the manufacturing of the sintercorundum casting slip.